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ABSTRACT

This booklet contains a list of occupations, selected from the 1986-87 Occupational Outlook Handbook of the U.S. Bureau of Labor Statistics, for which a high school diploma is not required. This information is provided for each occupation: job qualifications and requirements; information on talents, aptitudes, and interests that the occupation demands; and the national employment outlook for the job through the mid-1990s. The jobs are grouped into 13 categories: arts, cleaning services, clerical, communications, construction trades, food service, health, industrial production, mechanics and repairers, personal services, sales, and transportation. The report concludes with tables that show the employment opportunities in Maricopa and Pima counties in Arizona and nonmetropolitan counties from 1988 to 1993. (YLB)

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# Jobs for Which You Can Qualify If You're Not a High School Graduate

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**A Labor Market Information Publication of the Research Administration, Arizona Department of Economic Security**

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# Jobs for Which A High School Diploma Is Not Required

May 1988

A Labor Market Information Publication
of the
Arizona Department of Economic Security
Research Administration

Adapted from the U.S. Department of Labor's
publication by the same name, printed
in 1979.

# Preface

Even when a high school diploma is not required by an employer, further education will enable a graduate to increase his or her choices of employment opportunities and enhance advancement in all occupational endeavors he or she may undertake. There still are many jobs for which one can qualify without a high school education, but they are becoming fewer with the passing of time. More and more employers are requiring their workers to have a high school diploma.

Practical experience and ability are more important in some occupations then formal education. Most of these occupations are found in the blue-collar field, such as the trades and services. A high school diploma is not mandatory for many apprenticeship programs and governmental assistance programs.

This booklet contains a list of occupations, selected from the 1986-87 Occupational Outlook Handbook of the U.S. Bureau of Labor Statistics, for which a high school diploma is not required. Included are the job qualifications and requirements; information on talents, aptitudes, and interests that these occupations demand; and the national employment outlook for these jobs through the mid-1990s. Also in this report are the employment opportunities in Maricopa and Pima counties, and Non-Metropolitan counties from 1988 to 1993. These write-ups are condensed from the Occupational Outlook Handbook, and any elaboration for these occupations may be found in that handbook.

Request for additional information may be directed to:

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## ARTS

DANCERS. Serious training for a career in dancing should start early in life, at ages 7 or 8 for ballet. Dedication, self-discipline, patience, perseverance, and devotion are requisites. Good health and physical stamina are necessary. Agility, coordination, grace, a sense of rhythm, a feeling for music and creative ability are also necessary. Training and practice, as well as unemployment, continue through a dancer's career. A high school diploma is not required.

Outlook. Nationally, the employment of dancers is expected to grow faster than the average for all occupations through the mid-1990s.

MUSICIANS. Many people who become professional musicians begin studying an instrument at an early age. Extensive and prolonged training is needed to acquire the necessary skill, knowledge, and ability. Musical talent, versatility, creative ability, poise and stage presence, self-discipline, and physical stamina are requisites. Constant study and practice, as well as intermittent unemployment, continue through a musician's life. A high school diploma is not required.

Outlook. In the United States, employment of musicians is expected to grow about as fast as the average for all occupations through the mid-1990s. However, there are not likely to be openings for all job seekers, and the keen competition for jobs is expected to continue.

SINGERS. As a rule, intensive voice training should not begin until after the individual has matured physically. However, formal voice training is not essential. Extensive and prolonged training is needed to acquire the necessary skill, knowledge, and ability. Musical talent, versatility, creative ability, poise and stage presence, self-discipline and physical stamina are requisites. Training and practice, and periodic unemployment, continue through a singer's career. A high school diploma is not required.

Outlook. Nationally, employment of singers is expected to grow about as fast as the average for all occupations through the mid-1990s. There are not likely to be openings for all singers, and the keen competition for jobs is expected to continue.

## CLEANING SERVICES

JANITORS and CLEANERS. Most janitors and cleaners learn their skills on the job. No special education is required, but the beginner should know simple arithmetic and be able to follow instructions. High school shop courses are helpful for minor plumbing or carpentry work.

Outlook. In the United States, employment of janitors, cleaners, and housekeepers is expected to grow about as fast as the average for all occupations through the mid-1990s. Robots with multiple cleaning functions will probably not become available until after 1995.

PEST CONTROLLERS. Most new entrants begin as helpers and can do routine pest control work after two or three months of on-the-job training. Employers generally prefer to hire high school graduates who are licensed to drive. About 30 states require pest controllers to be licensed.

Outlook. Nationally, little change in employment is expected through the mid-1990s.

# CLERICAL

CASHIERS. Cashier jobs tend to be entry-level positions. Many employers offer on-the-job training. Employers prefer persons with a high school diploma. Courses in business arithmetic, bookkeeping, typing, and other business subjects are good preparation for cashier jobs. Cashiers should be able to do repetitious work accurately and need finger dexterity, a high degree of eye-hand coordination, an aptitude for working with figures, and the ability to deal with the public.

Outlook. Nationally, more job openings are expected to be available for cashiers than for other occupations through the mid-1990s. The vast majority of openings will occur as cashiers transfer to other occupations or leave the labor force.

FILE CLERKS. Several weeks or months of on-the-job training are usually given to newly hired file clerks. High school graduates are preferred. Typing and some knowledge of office practices are helpful.

Outlook. In the United States, little change in employment is expected through the mid-1990s.

MAIL CARRIERS and POSTAL CLERKS. Mail carriers and postal clerks must qualify on a written examination that measures speed and accuracy at checking names and numbers; and pass a physical examination. A driver's licence, a good driving record, and a road test may be required. Points are added to the scores of veterans. New mail carriers and postal clerks are trained on the job. A good memory, good coordination, and the ability to read rapidly and accurately are important.

Outlook. Nationally, employment of mail carriers is expected to remain stable. Employment of postal clerks is expected to decline through the mid-1990s.

SHIPPING, RECEIVING, and TRAFFIC CLERKS. New employees usually are trained on the job. High school graduation is preferred. Business arithmetic, typing, and other high school business subjects are helpful. The ability to write legibly, keep orderly records, and master company procedures are requisites.

Outlook. Nationally, employment of traffic, shipping, and receiving clerks is expected to increase more slowly than the average for all occupations through the mid-1990s, principally because many clerks work in the industries of manufacturing and wholesale trade, two sectors that are expected to grow more slowly than the overall economy.

STOCK CLERKS. Newly hired workers learn their skills on the job, the basic ones usually in a few weeks. High school graduates are preferred by employers. The ability to read and write well and a knowledge of arithmetic are necessary. Knowing how to type and file is useful.

Outlook. In the United States, little change in the employment of stock clerks is expected through the mid-1990s.

TELLERS. New tellers usually learn their duties through on-the-job and formal training of a few days to three weeks or longer. Virtually all tellers have at least a high school education. Bank tellers must have good clerical skills and be friendly and attentive. Maturity, neatness, tact, and courtesy are also important.

Outlook. Nationally, the number of bank tellers is expected to increase more slowly than the average for all occupations through the mid-1990s because of the increasing use of automatic teller machines and other electronic equipment. This occupation, however, provides a relatively large number of job openings created by replacement needs.

## COMMUNICATIONS

COMMUNICATIONS and EQUIPMENT MECHANICS. Trainees for this occupation generally begin as frame wirers. There are no set educational requirements. Many companies do not require a high school diploma. New workers receive about six months of classroom instruction and on-the-job training. One or two years of experience qualifies one for a more skilled job, as above. Arithmetic, verbal, and abstract reasoning skills are requisites for this occupation. Physical strength and agility are needed, as are manual dexterity, analytical ability, self-discipline, logic, reading comprehension, and color distinguishing. Additional classroom instruction and on-the-job training are provided by the companies as advancement and the complexity of the work progresses.

Outlook. In the United States, employment of communications equipment mechanics is expected to grow more slowly than the average for all occupations through the mid-1990s.

LINE INSTALLERS and CABLE SPLICERS. Line installer usually is an entry-level job. Experience and training lead to higher skilled jobs. Most employers prefer high school graduates. Verbal, arithmetic, and abstract reasoning skills are the basic requisites for this occupation. Physical ability is required. Mechanical aptitude, electricity principles, stamina, and color distinguishing are helpful. Motivation, self-discipline, and teamwork ability are needed. Continuing training, by the employer or in training schools, is required.

Outlook. In the United States, employment of line installers and cable splicers is expected to grow about as fast as the average for all occupations through the mid-1990s.

TELEPHONE INSTALLERS and REPAIRERS. Trainees for this occupation are usually chosen from company ranks. A basic knowledge of electricity and electronics is required. Physical stamina, good eyesight, good balance, and practical problem solving ability are requisites. Most employers prefer a high school diploma. Continuing classroom instruction and on-the-job training are required.

Outlook. Nationally, employment of telephone installers and repairers is expected to decline through the mid-1990s. Technological improvements make this work less labor intensive. Job openings will result exclusively from replacement needs.

TELEPHONE OPERATORS. Classroom instruction for this occupation usually lasts up to three weeks and is followed by on-the-job training. Some employers require a high school diploma, with courses in speech, office practices, and business math. Pleasant, courteous, and patient are personal characteristics necessary for this occupation. Good listening, reading, spelling, and arithmetic abilities are needed for this occupation.

Outlook. In the United States, employment of telephone operators is expected to grow as fast as the average for all occupations through the mid-1990s.

## CONSTRUCTION TRADES

BRICKLAYERS and STONEMASONS. Most bricklayers and some stonemasons acquire their skills by working as helpers or hod carriers and by observing and learning from experienced workers. The remainder learn their skills through an apprenticeship, usually three years on-the-job training and 144 classroom hours per year in length. A high school education is preferable, with courses in mathematics, mechanical drawing, and shop.

Outlook. Nationally, employment of bricklayers and stonemasons is expected to grow as fast as the average for all occupations through the mid-1990s.

CARPENTERS. Carpenters learn their trade through on-the-job training and through formal training programs, usually about three to four years in length. A high school education is desirable, including courses in carpentry shop, mechanical drawing, and general mathematics. Manual dexterity, eye-hand coordination, good physical condition, and a good sense of balance are important.

Outlook. Nationally, employment of carpenters is expected to increase as fast as the average for all occupations through the mid-1990s.

CARPET INSTALLERS. The vast majority of carpet installers learn their trade informally on the job by working as helpers. Others learn through apprenticeship programs, 1 1/2 to 2 years, which include on-the-job training as well as related classroom instruction. A high school education is preferred, with courses in mathematics and shop.

Outlook. In the United States, employment of carpet installers is expected to grow about as fast as the average for all occupations through the mid-1990s.

CONCRETE MASONS and TERRAZZO WORKERS. Concrete workers and terrazzo workers learn their trades either through on-the-job training as helpers or through two- or three- year apprenticeship programs, which include on-the-job training and 144 classroom hours each year. Employers prefer high school graduates with courses in shop mathematics, blueprint reading, or mechanical drawing.

Outlook. Nationally, the employment of concrete masons and terrazzo workers is expected to grow about as fast as the average for all occupations through the mid-1990s.

DRYWALL WORKERS and LATHERS. Most drywall and lathing workers start as helpers and learn most of their skills on the job. A two-year apprenticeship program for drywall finishers is offered. Employers prefer high school graduates, with courses in carpentry and simple arithmetic.

Outlook. In the United States, employment of drywall workers and lathers is expected to grow about as fast as the average for all occupations through the mid-1990s.

ELECTRICIANS. Completion of a four-year apprenticeship program for electricians is recommended. A larger proportion of electricians are trained through this program than any other construction trade. On-the-job training and 144 hours of classroom instruction per year are provided. Many electricians, however, learn their trade informally on the job. A high school diploma is required for the apprenticeship program. Courses in electricity, electronics, mechanical drawing, science, algebra and shop provide a good background.

Outlook. Employment of electricians in the United States is expected to increase about as fast as the average for all occupations through the mid-1990s.

GLAZIERS. It is recommended that glaziers learn the trade through a three- to four- year apprenticeship program, which includes on-the-job training and 144 hours of classroom instruction per year. Many glaziers learn the trade informally on the job. Employers prefer high school or vocational school graduates, with courses in general mathematics, blue print reading or mechanical drawing, general construction, and shop.

Outlook. Nationally, employment of glaziers is expected to increase faster than the average for all occupations through the mid-1990s.

INSULATION WORKERS. Most insulation workers learn their trade through on-the-job training programs, lasting up to two years. Informal apprenticeship programs consist of four years of on-the-job training completed with classroom instruction, and provide in-depth instruction in all phases of insulation. These programs require a high school diploma and an age of 18 years. Employers prefer high school graduates with courses in blueprint reading, shop math, and general construction.

Outlook. Nationally, employment of insulation workers is expected to grow as fast as the average for all occupations through the mid-1990s.

PAINTERS and PAPERHANGERS. Painting and paperhanging are learned through apprenticeship or informal, on-the-job instruction. The apprenticeship consists of three years of on-the-job training and 144 hours per year of classroom instruction. Apprentice or helper applicants generally must be at least 16 years old. A high school or vocational school education that includes courses in mathematics is preferred by employers.

Outlook. In the United States, employment of painters and paperhangers is expected to grow more slowly than the average for all occupations through the mid-1990s.

PLASTERERS. An apprenticeship, including two years of on-the-job training and at least 144 hours annually of classroom instruction, is recommended as the best way to learn plastering. However, most people learn the trade by working as helpers. Applicants for apprentice or helper jobs generally must be at least 17 years old, in good physical condition, and have manual dexterity. Applicants who have a high school education are preferred. Courses in general mathematics, mechanical drawing, and shop are useful.

Outlook. Nationally, little or no change in the employment of plasterers is expected through the mid-1990s.

PLUMBERS and PIPEFITTERS. Apprenticeship, consisting of four or five years of on-the-job training and at least 216 hours annually of instruction, is the best way for plumbers or pipefitters to learn the trade. Most people, however, learn plumbing and pipefitting by working for several years as helpers. Most communities require plumbers to pass an examination for a license. Applicants for apprentice or helper jobs generally must be at least 18 years old and in good physical condition. Employers prefer high school graduates with courses in shop, plumbing, general maintenance, drafting, blueprint reading, and physics.

Outlook. In the United States, employment of plumbers and pipefitters is expected to grow as fast as the average for all occupations through the mid-1990s.

ROOFERS. Most roofers acquire their skills informally by working as helpers. Some train through three-year apprenticeship programs, consisting of a minimum of 1,400 hours of on-the-job training and 144 hours of classroom instruction. Good physical condition, 18 years old minimum, and a good sense of balance are essential. A high school education is helpful, with courses in mechanical drawing and basic mathematics.

Outlook. Nationally, employment of roofers is expected to increase about as fast as the average for all occupations through the mid-1990s.

SHEET-METAL WORKERS. Apprenticeship, four years of on-the-job training and classroom instruction, is the best way to learn this trade. However, many workers learn informally on the job. Apprentice applicants or helpers should be in good physical condition and have mechanical aptitude. A high school or vocational school education may be required. Courses in trigonometry, geometry, mechanical drawing, and shop are helpful.

Outlook. Nationally, employment of sheet-metal workers in construction is expected to increase about as fast as the average for all occupations through the mid-1990s. Most openings will arise as experienced workers leave the occupation.

STRUCTURAL and REINFORCING METAL WORKERS. Apprenticeship, three years of on-the-job training and a minimum of 144 hours a year, is recommended as the best way to learn this trade. However, a large number of ironworkers learn informally on the job. Ironworker applicants must be at least 18 years old. A high school diploma is preferred,

with courses in general mathematics, mechanical drawing, and shop. Good physical condition, agility, and balance are requirements for ironworkers.

Outlook. In the United States, employment mostly as replacements of structural and reinforcing metal workers is expected to increase about as fast as the average for all occupations through the mid-1990s.

TILESETTERS. Apprenticeship, three years of on-the-job training and classroom instruction, is recommended as the best way to learn this trade. A large number of tilesetters acquire these skills as helpers. Employers usually prefer high school graduates, with courses in mathematics, mechanical drawing, and shop. Good physical condition, manual dexterity, and a good sense of color harmony are important assets.

Outlook. Nationally, employment mostly as replacements of tilesetters is expected to increase about as fast as the average for all occupations through the mid-1990s.

## FOOD SERVICE

BARTENDERS. Most bartenders learn their trade on the job as helpers, waiters' assistants, or waiters or waitresses. Generally, bartenders must be at least 21 years of age. Bartenders should have a pleasant personality, a neat and clean appearance, and possess stamina and strength. Some states require bartenders to have health certificates. Some must be bonded.

Outlook. In the United States, job opportunities for bartenders are expected to be plentiful as job turnover in this occupation is very high. Employment of bartenders is expected to increase faster than the average for all occupations though the mid-1990s.

COOKS. Many chefs and cooks start work as a short-order cook or in an unskilled position as kitchen/cook helper. An increasing number of chefs and cooks are obtaining their training through high school, vocational programs, professional culinary institutes, industry associations, and trade unions. Even though a high school diploma is not required for beginning jobs, it is recommended for those planning a cook's or chef's career. Courses in business, arithmetic, and business administration are particularly helpful.

Outlook. Nationally, employment of chefs and cooks is expected to increase faster than the average for all occupations through the mid-1990s. Job openings, particularly as replacements for chefs and cooks, are expected to be plentiful.

DINING ROOM ATTENDANTS and DISHWASHERS. These occupations can be learned on the job with very little formal training. A high school diploma is not required. State laws often require dining room attendants and dishwashers to obtain health certificates.

Outlook. In the United States, employment of dining room attendants and dishwashers is expected to increase faster than the average for all occupations through the mid-1990s. Job openings will be plentiful.

FOOD COUNTER WORKERS. Most counter workers learn their skills on the

job. A friendly and courteous attitude are desirable. Employers prefer persons who are good in arithmetic and have attended high school. State laws often require counter workers to obtain health certificates.

Outlook. Nationally, employment of food counter workers is expected to increase faster than the average for all occupations through the mid-1990s. Job openings will be plentiful.

MEATCUTTERS and BUTCHERS. Most butchers and meat cutters acquire their skills informally on the job or through apprenticeship programs. A high school diploma is not required. Skills important in meatcutting are manual dexterity, good depth perception, color discrimination, good eye-hand coordination, and strength. A health certificate may be required.

Outlook. In the United States, employment of butchers and meatcutters, mostly as replacements, is expected to decline slightly through the mid-1990s. More meatcutting in the future will be done at the meat-packing plants.

WAITERS and WAITRESSES. There are no specific educational requirements for waiter and waitress positions, although many employers prefer high school graduates. Most of these skills are picked up on the job. Personal characteristics of friendly, courteous, attentive, good memory, stamina, even disposition, neat and clean, and possession of an arithmetic ability are requisites. State laws often require health certificates for employment.

Outlook. Nationally, employment of waiters and waitresses is expected to grow faster than the average for all occupations through the mid-1990s. Job openings, as this is a high-turnover occupation, will be plentiful through the mid-1990s.

## HEALTH

LICENSED PRACTICAL NURSES. Practical nurse training programs, offered in all states, generally last one year and include both classroom study and clinical practice. A high school diploma is preferred. LPNs should have a deep regard for human welfare, be emotionally stable, able to follow orders, and work under close supervision. A written examination and license are required in all states.

Outlook. Nationally, employment of LPNs is expected to rise about as fast as the average for all occupations through the mid-1990s.

NURSING AIDES and PSYCHIATRIC AIDES. These are entry-level jobs that do not ordinarily require work experience. In many states, however, nursing aides must be certified, after passing an approved course of instruction of from 65 to 240 hours. In other states, nursing aides generally are trained after they are hired. A high school diploma is not required. Personal qualifications are warmth, dependability, and maturity.

Outlook. In the United States, employment of nursing aides is expected to grow faster than the average for all occupations through the mid-1990s; that of psychiatric aides, more slowly.

## INDUSTRIAL PRODUCTION

ASSEMBLERS. Training varies according to the level of skill required. Promotion to higher skilled positions is usually from inside the company. The ability to do accurate work at a fast pace is a key job requirement. A high school diploma is helpful but usually is not required.

Outlook. Nationally, employment mainly as replacements is expected to grow about as fast as the average for all occupations through the mid-1990s. Automation will affect this occupation's future employment numbers.

BOILERMAKERS. Occupations included in this category are assemblers, instrument makers, ironworkers, patternmakers, tool-and-die makers, and others. A formal apprenticeship is the best way to learn this trade, although working for several years as helpers is commonly used. Employers prefer high school or vocational school graduates, and courses in shop, mathematics, blueprint reading, welding, and modern metalworking. Most applicants must pass a physical examination due to the heavy work necessary in these jobs.

Outlook. In the United States, employment mainly as replacements is expected to increase more slowly than the average for all occupations through the mid-1990s.

CONSTRUCTION MACHINERY OPERATORS. A three-year, on-the-job apprenticeship with 144 hours of related classroom instruction is recommended. High school graduates are preferred. A good sense of balance as well as good eye-hand-foot coordination and physical strength is needed.

Outlook. Nationally, employment of construction machinery operators is expected to grow about as fast as the average for all occupations through the mid-1990s.

FURNITURE UPHOLSTERERS. The best way to learn this trade is through on-the-job training, usually requiring three to five years to become a skilled upholsterer. Basic training in upholstery is available in high school, vocational and technical schools. Upholsters should have manual dexterity and good coordination; and an eye for detail and creative flair is helpful.

Outlook. In the United States, employment, mainly as replacements, is expected to grow more slowly than the average for all occupations through the mid-1990s.

MACHINE OPERATORS, Metalworking and Plastic. Most operators learn their skills on the job, but becoming a skilled operator often requires one to two years. High school courses in mathematics and blueprint reading are helpful. Mechanical aptitude and physical stamina are important.

Outlook. Nationally, little change is expected in the overall employment of metalworking and plastic-working machine operators through the mid-1990s.

MILLWRIGHTS. Most millwrights start as helpers and learn the trade on the job, usually taking 6 to 8 years. Formal apprenticeship programs will cut down this time. A high school diploma is preferred, with courses in science, mathematics, mechanical drawing, and machine shop practice. Mechanical aptitude, strength, and agility are important.

Outlook. In the United States, employment of millwrights is expected to increase more slowly than the average for all occupations through the mid-1990s.

PHOTOGRAPHIC PROCESSORS. Most photo process workers learn their skills through on-the-job training, generally taking two to three years to become a fully qualified dark-room technician. Employers prefer high school graduates, with courses in chemistry and mathematics. Formal training is available from community colleges and vocational and technical schools.

Outlook. In the United States, employment of photo process workers is expected to increase faster than the average for all occupations through the mid-1990s. Many new jobs will be created, but most openings will result from replacement needs.

PRODUCTION PAINTERS, transportation. Most production painters, including automotive, start as helpers and gain their skills informally. Three to four years of on-the-job training are usually required to become a skilled automotive painter. Completion of high school generally is not required. Painters should have good health, keen eyesight, and a good color sense.

Outlook. Nationally, employment of transportation equipment painters is expected to grow about as fast as the average for all occupations through the mid-1990s. Changes in economic conditions do not significantly affect the employment of automotive painters.

ROUSTABOUTS. Little or no formal training or work experience is required to obtain a roustabout job, doing routine physical labor and maintenance in and around oil fields. High school graduates are preferred. A physical examination is required. Mechanical ability, agility, coordination, and good eyesight are requisites.

Outlook. In the United States, little or no change in the employment of roustabouts is expected through the mid-1990s.

STATIONARY ENGINEERS. Many stationary engineers start as helpers or oilers and acquire their skills through informal on-the-job experience. Formal apprenticeship programs of four years are recommended. High school or trade school graduates are preferred. Emphasis is placed on the subjects of mathematics, mechanical drawing, machine-shop practice, physics, and chemistry. Mechanical aptitude, manual dexterity, and good physical condition are important.

Outlook. Nationally, employment of stationary engineers, primarily through replacements, is expected to grow more slowly than the average for all occupations through the mid-1990s. Increased automation should limit the number of new stationary engineer positions.

WELDERS and CUTTERS. Several years of on-the-job training are necessary to become a skilled welder. High schools, vocational-technical

institutes, and community colleges offer entry-level welding courses. Manual dexterity, good eyesight, and good eye-hand coordination are requisites. Courses in shop mathematics, mechanical drawing, blueprint reading, physics, and chemistry are helpful.

Outlook. In the United States, employment of welders is expected to increase as fast as the average for all occupations through the mid-1990s.

## MECHANICS AND REPAIRERS

AUTOMOBILE BODY REPAIRERS. On-the-job training as helpers is the most common method to obtain the skills of an automobile body repairer. Generally, skill in all aspects of body repair requires three to four years of on-the-job training. Most employers prefer to hire high school graduates. Completion of a formal training program in automotive body repair is highly desirable.

Outlook. Nationally, employment of automotive body repairers is expected to increase about as fast as the average for all occupations through the mid-1990s.

AUTOMOBILE and MOTORCYCLE MECHANICS. Many automotive mechanics still learn their trade on the job. However, due to rapid technological changes in this trade, formal training is recommended. Knowledge of electronics is increasingly desirable. It usually takes one to two years of experience to become a service mechanic, or as little as six months of concentrative instruction. Specialized mechanic positions will take longer. High school courses in automotive repair, electronics, physics, chemistry, and mathematics are useful. Completion of high school is an advantage in obtaining an entry job.

Outlook. Nationally, employment of automotive and motorcycle mechanics is expected to increase faster than the average for all occupations through the mid-1990s. More job openings are expected for automotive and motorcycle mechanics than for most other occupations.

DIESEL MECHANICS, including Trucks and Buses. Most diesel mechanics learn their skills on the job. Many employers, however, prefer graduates of formal one- to two- year training programs. The study of electronics is becoming more desired. For entry jobs, employers look for applicants with mechanical aptitude, at least 18 years of age, and in good physical condition. Completion of high school is desirable, with good reading skills needed.

Outlook. In the United States, employment of diesel mechanics is expected to increase faster than the average for all occupations through the mid-1990s. The majority of job openings will be as replacements.

ELECTRONIC HOME ENTERTAINMENT EQUIPMENT REPAIRERS. Training in electronics generally is required to get an entry-level job. New repairers usually begin in the shop or in the field under supervision. Formal training, including courses in mathematics, physics, schematic reading, electricity, and hands-on work, last from one to two years. These repairers must be able to manipulate small parts and tools, have good eye-hand coordination, normal hearing, good eyesight, color per-

ception, courtesy, and tact. Some states require repairers to be examined and licensed.

Outlook. In the United States, employment of electronic home entertainment equipment repairers, mostly as replacements, is expected to increase about as fast as the average for all occupations through the mid-1990s.

FARM EQUIPMENT MECHANICS. Most farm equipment mechanics are hired as trainees and learn the trade on the job. At least two years of on-the-job training is usually necessary before one can do routine mechanical work. With the development of more complex farm implements, technical training including electronics has become more important. Employers prefer high school graduates, and stress previous diesel and gasoline engine experience or training, and experience in hydraulics and welding.

Outlook. Nationally, the employment of farm equipment mechanics is expected to increase more slowly than the average for all occupations through the mid-1990s.

HOME APPLIANCE and POWER TOOL REPAIRERS. The skills for this occupation are generally learned on the job. Many entrants bring their skills with them. However, repairers usually get additional training from their employer, up to three years with more complex appliances. A high school diploma is desired. Courses in electricity and electronics and mechanical aptitude are also desirable. Technicians who work in customer homes must be courteous and tactful.

Outlook. Nationally, employment of home appliance and power tool repairers is expected to grow about as fast as the average for all occupations through the mid-1990s.

LOCKSMITHS. Most learn their trade on the job, usually taking four years to become skilled. One- or two- year training programs are available. The study of electronics is playing a more important role in this occupation. A high school diploma is preferred by employers. Some cities require locksmiths to be licensed. Generally, locksmiths are fingerprinted and charged a fee.

Outlook. Nationally, employment is expected to grow faster than the average for all occupations through the mid-1990s.

SHOE REPAIRERS. Shoe and leather workers and repairers generally learn their craft on the job, usually becoming fully skilled in six months to two years. Vocational training, lasting from six months to two years, is also available. Manual dexterity, mechanical aptitude, and self-discipline are important. A high school diploma is not required.

Outlook. In the United States, employment of shoe and leather workers and shoe repairers is expected to decline through the mid-1990s.

VENDING MACHINE SERVICERS and REPAIRERS. Most vending machine repairers enter the occupation as helpers or route drivers, and learn on the job. This learning process takes from six months to three years. Employers do not require a high school diploma. However, courses in electricity, refrigeration, and machine repair are helpful. Training programs, one to two years in length, are available. The study of

electronics is becoming increasingly more important. Employers require applicants to demonstrate mechanical ability, have a record of honesty and respect for the law, and the ability to deal tactfully with people.

Outlook. Nationally, the employment of coin and vending machine servicers and repairers is expected to grow about as fast as the average for all occupations through the mid-1990s.

WATCHMAKERS. Most learn their trade through 18- to 24- month courses in watch repair schools. Others learn informally on the job, requiring usually three to four years. A high school diploma is preferred. Watchmakers must be able to manipulate small parts and tools, have good eye-hand coordination and good eyesight.

Outlook. In the United States, employment of watchmakers is expected to increase slower than the average for all occupations through the mid-1990s.

## PERSONAL SERVICES

BARBERS. Nearly all states require barbers to be schooled and licensed. Many states require examinations and fees before entering this occupation. Some states require graduation from high school. Personal characteristics of patience, good disposition, good eye-hand coordination, and sound judgement are required.

Outlook. In the United States, employment of barbers is expected to increase more slowly than the average for all occupations through the mid-1990s. Because barbers have a strong attachment to their occupation, most job openings will result as replacements.

CHILDCARE WORKERS. Entry-level positions require little or no experience. Some employers provide on-the-job training. Employers prefer individuals with a high school diploma. Courses in psychology, sociology, home economics, nutrition, and family living are desirable for this occupation. Workers should be in excellent health and possess much energy and physical stamina.

Outlook. Nationally, employment of childcare workers is expected to grow more slowly than the average for all occupations through the mid-1990s. This occupation has a high turnover rate.

COSMETOLOGISTS. All states require cosmetologists to be schooled, examined, and licensed. Fees are required. Some states require a high school diploma. The same personal characteristics as for barbers are required.

Outlook. In the United States, employment of cosmetologists is expected to grow faster than the average for all occupations through the mid-1990s. Job openings for cosmetologists are expected to be plentiful through the mid-1990s.

GUARDS. Many employers give newly hired guards instruction and provide several weeks of on-the-job training. Most employers prefer guards who are high school graduates. Good character references, no police record, good health and personal habits, mental alertness, and emotional stability are requisites.

Outlook. In the United States, employment of guards is expected to grow faster than the average for all occupations through the mid-1990s. Growth will be tempered by the use of technologically advanced electronic systems. Job openings of this occupation are expected to be plentiful through the mid-1990s.

MAIDS and HOUSEKEEPING CLEANERS. Most jobs require little formal education. The abilities to cook, sew, wash and iron, clean house, and care for children are important. Many of these are learned in the home.

Outlook. Nationally, despite an expected decline in employment through the mid-1990s, replacement needs will create many job openings.

USHERS. Most of the skills necessary for this occupation are picked up on the job. Employers prefer persons who are attentive, neat and clean, have an even disposition, and can communicate clearly.

Outlook. In the United States, employment of ushers is expected to grow about as fast as the average for all occupations through the mid-1990s.

## SALES

AUTOMOTIVE SERVICE STATION ATTENDANTS. These workers are trained on the job. Most employers prefer applicants to have a driver's license, an understanding of how an automobile works, and sales ability. A high school diploma is not required.

Outlook. In the United States, little change in the employment of this occupation is expected through the mid-1990s.

RETAIL SALES WORKERS. On-the-job experience and introductory instruction on making out sales checks and operating cash registers provide the skill requirements for this occupation. Employers prefer persons who are hard working, ambitious, conscientious, enjoy selling, can communicate clearly, and have a pleasant personality and a neat appearance. Employers prefer high school graduates and those with an arithmetic skill.

Outlook. In the United States, employment of retail sales workers is expected to grow about as fast as the average for all workers through the mid-1990s. As turnover in this occupation is high, retail sales jobs will continue to provide more job openings than almost any other occupation through the mid-1990s.

## TRANSPORTATION

BUS DRIVERS. About 75 percent entering bus driving, mostly school, begin with part-time jobs. Most states require that drivers have a chauffeur's license or a special school bus license. Intercity bus drivers must meet qualifications established by the U.S. Department of Transportation or a state agency. Applicants for local transit and intercity bus driver positions should be at least 21 years old, and school bus drivers, 18 years old in most states. Applicants must be

able to read, write, and speak effectively; be in good health; and have a good driving record; at least 20/40 vision with or without glasses, good hearing, and normal use of their legs and arms. Many employers prefer applicants with a high school education and passing of a physical and written examination. Many intercity bus companies and local transit systems give driver trainees two to eight weeks of classroom and "behind-the-wheel" instruction.

Outlook. Nationally, employment of bus drivers is expected to increase about as fast as the average for all occupations through the mid-1990s. Job openings for bus drivers are expected to be plentiful through the mid-1990s.

CAPTAINS, WATER VESSEL. Three years of sea experience in the Coast Guard or Navy, or graduation from the U.S. Merchant Marine or state merchant marine academies, or from a trade union program are required. Examination and a license from the Coast Guard is required. A high school diploma is not required.

Outlook. Nationally, employment of water vessel captains is expected to increase about as fast as the average for all occupations through the mid-1990s.

MATES and ABLE SEAMEN. Most sailors learn on the job, although previous sea experience in the Coast Guard or Navy is helpful. Applicants are required to have necessary papers as doctor's certificate, a letter of availability from the employer, and special identification papers from the Coast Guard. Training programs exist to help experienced sailors upgrade their skills. Graduation from high school is not required.

Outlook. In the United States, employment of these occupations is expected to increase slower than the average for all occupations through the mid-1990s.

PARKING LOT ATTENDANTS. These workers are trained on the job. Some employers offer training in proper driving techniques, company policy, and record-keeping. A driver's license is required. Mathematical ability is necessary in the applicants. Generally, employers prefer high school graduates.

Outlook. In the United States, little change in employment of parking lot attendants is expected through the mid-1990s.

RAILROAD BRAKE, SIGNAL, and SWITCH OPERATORS. On-the-job training as helpers, up to two to four years, is usual before becoming signal installers or maintainers. High school or vocational school graduates are preferred. Courses in blueprint reading and electronics are preferred.

Outlook. Nationally, employment of these occupations is expected to decline through the mid-1990s.

TAXICAB DRIVERS. Most cities require taxicab drivers to have a chauffeur's license and pass a written test on taxicab and traffic regulations. Some companies have short training programs. A large number of employers hire only applicants who are at least 21 years old and some, 25 years old.

Outlook. Nationally, employment of taxi drivers is expected to grow about as fast as the average for all occupations through the mid-1990s.

TIRE REPAIRERS and CHANGERS. Most of the skills necessary for this occupation are picked up on the job. Hand dexterity and strength are requisites for this occupation.

Outlook. Nationally, employment of tire repairers and changers is expected to grow about as fast as the average for all occupations through the mid-1990s.

TRUCK DRIVERS. Local truck drivers are usually trained on the job, either as drivers, helpers, or dock workers, particularly for long-distance truck drivers. Both local and interstate truck drivers must have a chauffeur's license and pass a physical and written examination and a driving test. Good hearing, 20/40 vision with or without glasses, physical stamina, and good health are requisites. A high school diploma is not required. High school and private and public technical vocational training are desirable methods of preparing for truck driving jobs.

Outlook. In the United States, employment of truck drivers is expected to increase about as fast as the average for all occupations through the mid-1990s. This occupation has among the largest number of job openings each year.

VEHICLE WASHERS and EQUIPMENT CLEANERS. Most of the skills for this occupation are picked up on the job. A high school diploma is not required. Physical stamina and hand-eye coordination of these workers are requirements.

Outlook. Nationally, employment of this occupation is expected to increase slower than the average for all occupations through the mid-1990s.

## 1988 OCCUPATIONAL EMPLOYMENT AND 1988 to 1993 EMPLOYMENT GROWTH

### Arizona, Maricopa, Pima, and Non-Metropolitan Counties

| Occupation | Arizona | | Maricopa | | Pima | | Non-Metro | |
|---|---|---|---|---|---|---|---|---|
| | 1988 | 1988-93* | 1988 | 1988-93* | 1988 | 1988-93* | 1988 | 1988-93* |
| ARTS | | | | | | | | |
| Musicians | 1,107 | 340[2] | 795 | 233[2] | 264 | 96[1] | 48 | 11[3] |
| CLEANING SERVICES | | | | | | | | |
| Janitors and Cleaners | 22,559 | 5,461[3] | 13,481 | 3,401[2] | 5,135 | 1,273[3] | 3,943 | 787[3] |
| Pest Controllers | 1,186 | 371[2] | 677 | 201[2] | 335 | 85[2] | 174 | 85[1] |
| CLERICAL | | | | | | | | |
| Cashiers | 28,481 | 7,270[2] | 16,814 | 4,301[2] | 5,360 | 1,476[2] | 6,307 | 1,493[3] |
| File Clerks | 2,425 | 592[3] | 1,858 | 460[3] | 296 | 74[2] | 271 | 58[3] |
| Mail Carriers and Postal Clerks | 5,052 | 694[4] | 3,580 | 585[3] | 1,040 | 62[4] | 432 | 47[4] |
| Shipping/Receiving and Traffic Clerks | 7,791 | 1,890[3] | 5,714 | 1,463[2] | 1,053 | 204[3] | 1,024 | 223[3] |
| Stock Clerks | 11,708 | 2,925[3] | 8,043 | 2,143[2] | 2,029 | 418[3] | 1,636 | 364[3] |
| Tellers | 7,223 | 1,708[3] | 4,557 | 1,164[2] | 1,448 | 370[2] | 1,218 | 174[4] |
| COMMUNICATIONS | | | | | | | | |
| Line Installers and Cable Splicers | 1,332 | 299[3] | 803 | 146[3] | 233 | 58[3] | 296 | 95[2] |
| Telephone Operators | 5,705 | 1,463[2] | 3,945 | 977[3] | 1,044 | 252[2] | 716 | 234[2] |
| CONSTRUCTION TRADES | | | | | | | | |
| Bricklayers and Stonemasons | 2,823 | 592[3] | 1,937 | 326[3] | 489 | 143[2] | 397 | 123[2] |
| Carpenters | 12,242 | 3,068[2] | 8,358 | 1,809[3] | 2,123 | 584[2] | 1,761 | 675[1] |
| Carpet Installers | 324 | 92[2] | 174 | 50[2] | 123 | 34[2] | 27 | 8[2] |
| Concrete Masons | 3,297 | 743[3] | 2,299 | 447[3] | 651 | 192[2] | 247 | 104[2] |
| Drywall Workers | 2,253 | 425[3] | 1,545 | 247[3] | 393 | 118[2] | 315 | 60[3] |
| Electricians | 7,682 | 1,538[3] | 4,696 | 956[3] | 1,196 | 309[2] | 1,790 | 273[3] |
| Glaziers | 903 | 200[3] | 608 | 129[3] | 156 | 46[2] | 139 | 25[3] |
| Insulation Workers | 857 | 142[3] | 680 | 107[3] | 77 | 23[2] | 100 | 12[4] |
| Painters and Paperhangers | 3,878 | 774[3] | 2,642 | 472[3] | 717 | 199[3] | 519 | 103[3] |
| Plasterers | 1,402 | 237[3] | 1,124 | 177[3] | 159 | 47[2] | 119 | 13[4] |
| Plumbers and Pipefitters | 5,542 | 1,190[3] | 3,773 | 804[3] | 961 | 268[2] | 808 | 118[4] |
| Roofers | 2,932 | 552[3] | 2,042 | 329[3] | 601 | 180[2] | 289 | 43[4] |
| Sheet Metal Workers | 3,114 | 682[3] | 2,255 | 496[3] | 555 | 149[2] | 304 | 37[4] |
| Structural Metal Workers | 1,205 | 238[3] | 870 | 154[3] | 116 | 33[2] | 219 | 51[3] |

## 1988 OCCUPATIONAL EMPLOYMENT AND 1988 to 1993 EMPLOYMENT GROWTH

### Arizona, Maricopa, Pima, and Non-Metropolitan Counties

| Occupation | Arizona | | Maricopa | | Pima | | Non-Metro | |
|---|---|---|---|---|---|---|---|---|
| | 1988 | 1988-93* | 1988 | 1988-93* | 1988 | 1988-93* | 1988 | 1988-93* |
| FOOD SERVICE | | | | | | | | |
| Bartenders | 7,952 | 2,629 [2] | 5,011 | 1,778 [1] | 1,620 | 602 [1] | 1,321 | 249 [3] |
| Cooks | 19,110 | 5,749 [2] | 11,156 | 3,760 [2] | 3,420 | 1,219 [1] | 4,534 | 770 [3] |
| Dining Room Attendants | 8,688 | 2,698 [2] | 6,163 | 2,037 [2] | 1,405 | 451 [2] | 1,120 | 210 [3] |
| Food Counter Workers | 7,810 | 2,096 [2] | 4,671 | 1,404 [2] | 1,590 | 487 [2] | 1,549 | 205 [4] |
| Meatcutters and Butchers | 1,843 | 453 [3] | 1,123 | 268 [3] | 278 | 71 [2] | 442 | 114 [2] |
| Waiters and Waitresses | 30,199 | 9,689 [2] | 18,963 | 6,631 [2] | 5,328 | 1,974 [1] | 5,908 | 1,084 [3] |
| HEALTH | | | | | | | | |
| Licensed Practical Nurses | 6,422 | 1,485 [3] | 4,264 | 939 [3] | 1,205 | 278 [3] | 953 | 268 [2] |
| Nursing Aides | 9,484 | 2,123 [3] | 5,719 | 1,148 [3] | 2,253 | 550 [3] | 1,512 | 425 [3] |
| INDUSTRIAL PRODUCTION | | | | | | | | |
| Assemblers | 8,924 | 2,213 [3] | 5,454 | 1,460 [2] | 2,066 | 477 [3] | 1,404 | 276 [3] |
| Boilermakers | 218 | 144 [1] | 49 | 17 [2] | ----- | --- | 169 | 127 [1] |
| Furniture Upholsterers | 732 | 219 [2] | 628 | 188 [2] | 71 | 24 [2] | 33 | 7 [3] |
| Machine Operators | 1,532 | 416 [2] | 1,106 | 313 [2] | 136 | 38 [2] | 290 | 65 [3] |
| Millwrights | 323 | 72 [3] | 153 | 47 [2] | 8 | 2 [2] | 162 | 23 [4] |
| Photographic Processors | 616 | 181 [2] | 583 | 173 [2] | 12 | 4 [2] | 21 | 4 [3] |
| Production Painters | 812 | 218 [2] | 605 | 171 [2] | 148 | 35 [3] | 59 | 12 [3] |
| Stationary Engineers | 445 | 66 [4] | 239 | 57 [3] | 76 | 9 [4] | 130 | 0 [4] |
| Welders and Cutters | 3,445 | 829 [3] | 2,081 | 601 [2] | 462 | 79 [3] | 902 | 149 [3] |
| MECHANICS and REPAIRERS | | | | | | | | |
| Auto Body Repairers | 2,276 | 607 [2] | 1,521 | 430 [2] | 425 | 127 [2] | 330 | 50 [3] |
| Auto and Motorcycle Mechanics | 11,099 | 2,730 [3] | 7,200 | 1,984 [2] | 1,948 | 490 [2] | 1,951 | 266 [4] |
| Diesel Mechanics | 3,566 | 783 [3] | 2,299 | 597 [2] | 396 | 78 [3] | 871 | 108 [4] |
| Electronic Home Entertainment Equipment Repairers | 633 | 186 [2] | 428 | 129 [2] | 118 | 38 [2] | 87 | 19 [3] |
| Farm Equipment Mechanics | 259 | 81 [2] | 114 | 39 [2] | 48 | 10 [3] | 97 | 32 [2] |
| Home Appliances and Power Tool Repairers | 671 | 186 [2] | 441 | 126 [2] | 163 | 43 [2] | 67 | 17 [2] |
| Locksmiths | 190 | 59 [2] | 64 | 18 [2] | 110 | 39 [1] | 16 | 2 [4] |
| Shoe Repairers | 76 | 21 [2] | 49 | 13 [2] | 0 | 0 | 27 | 8 [2] |
| Watchmakers | 46 | 14 [2] | 36 | 11 [2] | 4 | 1 [2] | 6 | 2 [2] |

## 1988 OCCUPATIONAL EMPLOYMENT AND 1988 to 1993 EMPLOYMENT GROWTH

### Arizona, Maricopa, Pima, and Non-Metropolitan Counties

| Occupation | Arizona | | Maricopa | | Pima | | Non-Metro | |
|---|---|---|---|---|---|---|---|---|
| | 1988 | 1988-93* | 1988 | 1988-93* | 1988 | 1988-93* | 1988 | 1988-93* |
| PERSONAL SERVICES | | | | | | | | |
| Barbers | 420 | 121[2] | 299 | 85[2] | 80 | 29[1] | 41 | 7[3] |
| Child Care Workers | 3,880 | 987[2] | 2,364 | 597[2] | 809 | 227[2] | 707 | 163[3] |
| Cosmetologists | 6,552 | 1,878[2] | 4,398 | 1,240[2] | 1,445 | 499[2] | 709 | 139[3] |
| Guards | 10,456 | 2,886[2] | 8,043 | 2,232[2] | 1,190 | 299[2] | 1,223 | 355[2] |
| Maids and Housekeeping Cleaners | 10,090 | 2,880[2] | 5,423 | 1,487[2] | 1,996 | 646[2] | 2,671 | 747[2] |
| Ushers | 670 | 192[2] | 559 | 159[2] | 68 | 24[1] | 43 | 9[3] |
| SALES | | | | | | | | |
| Retail Sales Workers | 51,260 | 12,778[3] | 34,838 | 9,112[2] | 8,434 | 1,783[3] | 7,988 | 1,883[3] |
| Automotive Service Station Attendants | 3,896 | 829[3] | 2,101 | 586[2] | 762 | 140[3] | 1,033 | 103[4] |
| TRANSPORTATION | | | | | | | | |
| Busdrivers | 4,677 | 818[3] | 2,312 | 518[3] | 904 | 129[4] | 1,461 | 171[4] |
| Parking Lot Attendants | 233 | 67[2] | 203 | 57[2] | 25 | 9[1] | 5 | 1[3] |
| Railroad Brake, Signal and Switch | 655 | 165[2] | 630 | 167[2] | 3 | -1[4] | 22 | -1[4] |
| Taxicab Drivers | 483 | 118[3] | 242 | 77[2] | 160 | 23[4] | 81 | 18[3] |
| Tire Repairers/Changers | 1,423 | 321[3] | 875 | 247[2] | 318 | 56[3] | 230 | 18[4] |
| Truckdrivers | 25,187 | 6,746[2] | 17,147 | 4,933[2] | 3,735 | 827[3] | 4,305 | 986[3] |
| Vehicle and Equipment Washers | 3,649 | 981[2] | 2,606 | 731[2] | 707 | 217[2] | 336 | 33[4] |

* Percentage Increase in Employment, 1988-93.

1 Over 35%
2 25 to 35%
3 15 to 25%
4 15% and under

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